Technical Committee 184: Industrial automation systems and integration
Subcommittee 4: Industrial data

TC 184/SC4 N1031

2000/05/15

ISO CD Ballot Results for ISO 15926-0002 Integration of life-cycle data for oil and gas production facilities: Part 2 - Data model

The ballot was circulated among SC4 members for its vote on 1999-12-30. 9 of our 18 P-members responded to the ballot:

COUNTRY	VOTE	COMMENTS
Australia		
Brazil		
Canada	A	
China		
France	Y	Attached
Germany		
Italy		
Japan		
Korea, Rep. Of	A	
Netherlands	Y	Attached
Norway	Y	
Portugal	A	
Russia		
Spain		
Sweden	Y	
Switzerland		
United Kingdom	A	Attached
United States	Y	Attached

The SC4 Secretary has reviewed the ballot responses and in consultation with the Chair has decided that the ballot proceed .

This document is also available digitally through SOLIS via ftp or www http://www.nist.gov/sc4/ndocs/n1031 .

See addendum n1032 for Netherland ballot comments. http://www.nist.gov/sc4/ndocs/n1032

Address reply to:
ISO TC 184/SC4 Secretariat
National Institute of Standards and Technology
Building 220, Room A127
Gaithersburg, MD 20899 USA
Phone: +1-301-975-4375 Telefax: +1-301-975-4694 Email: sc4sec@cme.nist.gov url - http://www.nist.gov/sc4/

Ballot Comments

NOTE:
Some of these comment may have been scanned using Optical Character Recognition and have not been verified as 100% accurate. Please refer to the original hard copy in cases of irregularities.

France

French comments on
ISO/CD 15926-2

FRANCE agrees to the circulation of the draft as a DIS with the following comments:

ISSUE NUMBER: FR 15926-2 # 01 #
AUTHOR: Guy Pierra
CLAUSE: general
CLASSIFICATION: MAJOR, TECHNICAL
ISSUE TITLE: Referencing capabilities to PLIB dictionaries and catalogues
DESCRIPTION:
CD 15926-2 does not contain any mechanism for referencing ISO 13584-based dictionaries and libraries. This means, for instance, that when expressing that some power transformer has an insulation resistance (measured as specified by IEC 60742) of 10 Mega Ohm, one needs to remodel, using ISO 15926-2, whole or part of IEC 61360-4. This process would be very expensive. It would be also error prone because no mapping rules are defined anywhere about how to perform this task.

In fact, this particular property is clearly defined in IEC 61360-4, where it is identified by the code:
112/2///61360_4_1.AAA000-01.AAE155-005
A mechanism should be provided by ISO 15926-2 for referencing such a code from ISO 15926-2 data.

Another example would be the referencing capabilities to supplier catalogues described as ISO 13584 data. When expressing that some particular transformer was provided by "John Doo Ltd" (associated in the PLIB catalogue with an unambiguous supplier identifier), as a member of its family of transformer "XYZ2346" (associated in the PLIB catalogue with an unambiguous class identifier), and identified, within this class, by its "input voltage" = 120V, its "no load output voltage"=240V, and its "output power" =100KW (all these properties being associated in the PLIB catalogue with unambiguous property identifiers), one would need to remodel whole or part of the catalogue and/or catalogue definitions, when the above information would be sufficient to characterize unambiguously and uniquely this transformer.

PROPOSED SOLUTION:
Add to ISO 15926-2 Data Model capabilities for referencing PLIB dictionaries and catalogues. More precisely, the four following capabilities (termed "services"), discussed in .ISO TC184/SC4/QC N068 (http://www.nist.gov/sc4/wg_qc/qc/qcn068/), should be added:
- Service 1 provides the capability to express that a classification of a piece of product data that is a part, a material, a feature etc. is defined in a PLIB compliant library.
- Service 2 provides the capability to express that the definition of a property of a piece of product data that is a part, a material, a feature etc. is provided in a PLIB compliant library.
- Service 3 provides the capability to express that a piece of product data that is a part, a material, a feature etc. itself is defined in a PLIB compliant library, i.e., as a PLIB catalogue-defined part.
- Service 4 provides the capability to express that the representation (of a piece of product data that is a part, a material, a feature etc.) is defined (e.g., parametrically) in a PLIB compliant library.(some or all of these capabilities have alreaduy been developed for AP 221)°

RELATED ISSUES: FR 15926-1 # 04 #, FR 15926-1 # 05 #

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- Service 3 provides the capability to express that a piece of product data that is a part, a material, a feature etc. itself is defined in a PLIB compliant library, i.e., as a PLIB catalogue-defined part.
- Service 4 provides the capability to express that the representation (of a piece of product data that is a part, a material, a feature etc.) is defined (e.g., parametrically) in a PLIB compliant library.(some or all of these capabilities have alreaduy been developed for AP 221)°
RELATED ISSUES: FR 15926-1 # 04 #, FR 15926-1 # 05 #

Netherlands

See addendum n1032, comments to long for inclusion

United Kingdom

1. INTRODUCTION

This document presents the UK vote, comments and recommendations on ISO/CD 15926-2

2. VOTING RESPONSE

The UK votes APPROVAL to ISO/CD 15926-2 with the following comments:

3. COMMENTS

ISSUE NUMBER UK 15926-2-01
AUTHOR: David Leal
CLAUSE: 5.15
CLASSIFICATION: Minor Technical
DESCRIPTION:
The current position of concept_of_characteristic in the
entity hierarchy will make it difficult to extend ISO 15926 to support:
-the definition of property variations with respect to space and time, and
-the description of property variations using the Mathematical functions schema of ISO 10303-50.

Discussion
Identification of a common_characteristic
The common_characteristic that is the temperature of the triple point of water, is identified by the real number 0.01 with respect to the International Practical Temperature Scale (Celsius) 1968 (IPTS-68).

The characteristic_space that is temperature, has a mapping to the space (or set) of real numbers greater that -273.17 that is the IPTS-68.

There are three classification (or membership) relationships:
- the temperature of the triple point of water is a member of temperature space;
- the real number 0.01 is a member of the space of reals greater than -273.17; and
- the relationship between the temperature of the triple point of water and 0.01 is a member of IPTS-68.

Characteristic distribution

A temperature distribution within the body of a physical object is a mapping, such that each point within the body has one corresponding value within temperature space. This mapping can be described by a mathematical function, such that:
- each mathematical value within the domain of the function identifies a point within the body of the physical object, according to a particular parameterisation scheme; and
- each mathematical value within the range of the function identifies a temperature value with respect to IPTS-68.

Hence a characteristic distribution is a mapping between:
feature_space: a set of points, fibres, planes or finite volumes (depending upon the view) within a physical_object; and

This is a concept that is not yet within ISO 15926.

characteristic_space: a set of instances of common_characteristic.

Proposed resolution:
Rename concept_of_characteristic to be characteristic_space, and make it a subtype of class_of_class. As a consequence, the relationship between characteristic_space and common_characteristic will become classification rather than specialisation_of_class.
ISSUE NUMBER UK 15926-2-02
AUTHOR: David Leal
CLAUSE: 5.20
CLASSIFICATION: Minor Technical
DESCRIPTION:
The use of the term 'value' is incorrect and confusing. This will make ISO 15926 difficult to understand and difficult to integrate with other standards.

In general the term 'value' means no more than a member of a set or space of such things. Hence:
- 0.01 is a real value and a member of the space of reals;
- my_document is an document value and is a member of the space defined by the DTD (this is the terminology used within the XML community);
- the temperature that is the triple point of water is a temperature value within the space of temperatures.

'Characteristic_value' could be a better name for the entity common_characteristic.
Proposed resolution:
Rename characteristic_value to be characteristic_numeric_value.
ISSUE NUMBER UK 15926-2-03
AUTHOR: David Leal
CLAUSE: 5.8
CLASSIFICATION: Minor Technical
DESCRIPTION:
The approach to identification is too complicated.

Simple identification is no more than an (application object - text string or number) pair.

For example there is the (my_motor_car - 'L206 VGK') pair. This is one of the set or class of (motor car - text string) pairs issued by the UK vehicle licensing centre.

A set of (application object - text string or number) pairs is an identification scheme. The scheme can be maintained by an organisation. The scheme can provide a unique identification. This is illustrated by the simple information model shown below:

(diagram supplied)

In engineering analysis it is necessary to identify points, fibres or planes within the volume of a physical object. The same approach is used, as follows:
- a particular point, fibre or plane is identified by a real tuple value;
- the set of points, fibres or planes has a identification mapping to a real tuple space.

Each identification mapping is a 'parameterisation' of the volume.
Proposed resolution:

Add an entity that is an association between an application object and: - a common_textual_encoded_information, to support textual identification; or - a number, to support numeric identification.
ISSUE NUMBER UK 15926-2-04
AUTHOR: Julian Fowler
CLAUSE: general
CLASSIFICATION: Minor Technical
DESCRIPTION:
The relationship between xxxx entity data types and class_of_xxxx entity data types is not clear - if a given class (happens) to have members only of type xxxx, does it "become" an instance of class_of_xxxx? In the absence of EXPRESS-2's "connotational subtype" construct, there is no mechanism by which an instance's type czn change based on its attributes/the relationships it participates in
Proposed resolution:
Provide additional text describing the intended relationship.
ISSUE NUMBER UK 15926-2-05
AUTHOR: Julian Fowler
CLAUSE: 4.3.3.3, 5.11.3
CLASSIFICATION: Minor Technical
DESCRIPTION:
It is not clear from the model what the members of the common_association are, and how these related to the class or classes that are related by subtypes of common_association. The intended usage of the "metadata" attributes in common_association is not fully explained.
Proposed resolution:
Add an informative annex (or part of one) that explains with examples how this entity data type and its subtypes are intended to be used.
ISSUE NUMBER UK 15926-2-06
AUTHOR: Julian Fowler
CLAUSE: general
CLASSIFICATION: Major Editorial
DESCRIPTION:
The quality of the entity data type definitions is inconsistent and often poor - a reader not familiar with the model and the general "EPISTLE" style of modelling would find it difficult to understand many of the entity data type definitions.
Proposed resolution:

United States

ISSUE NUMBER: USA-oil&gas-1
AUTHOR: USA
CLAUSE: Part 1, Clauses 1, 4, and 5
CLASSIFICATION: Major Technical
DESCRIPTION: The successful and expedient take-up of 15916 depends upon manufacturers putting their product information into 15926 and RDL (Reference Data Library) format to facilitate use of the manufactures' information. Business take-up may be impeded by this constraint. There is no known take-up of the RDL in the U.S. manufacturing industry, e.g., valve and gasket manufacturers agreeing to put their products in the RDL format.
PROPOSED SOLUTION: Industry proponents of 15926 should start communicating and campaigning with suppliers and buyers of components for take-up of 15926 and the RDL

RESOLUTION:

ISSUE NUMBER: USA-oil&gas-2
AUTHOR: USA
CLAUSE: Part 1, Claus 6
CLASSIFICATION: Major Technical
DESCRIPTION: The conformance requirements are incomplete and confusing. The document declares two forms of implementation for conforming implementation, but the document does not define any required characteristics for either implementation form. Transaction characteristics for consistent implementations are not specified, and the purposes of the conformance testing normative references (31, 34, 35) are not explained. Their relevance and use in clause 6 is unclear and sometimes convoluted. The conformance clause is inconsistent in explaining conformance requirements, e.g., 6.3.2.
* there is no defined mechanism for ensuring semantic completeness and integrity of implementations = could be addressed by defining high value (high frequency use) use cases and the corresponding set of needed templates, issued in conjunction with the DIS
* the definition of sufficient fundamental characteristics for an API (level of operations and syntax for compliant API) is missing, including some declaration of the relevant "context information" e.g., version of RDL used. This impedes delivery of consistent implementations that can be deployed easily in industry.
PROPOSED SOLUTION: Document transaction characteristics for consistent implementations and define templates for "often-used" concepts. This will include use of the RDL and clarification of the semantics supported with the templates. With this foundation, conformance requirements can be defined. Clarify the conformance testing principles referenced in Part 1, section 6.3.1.2, and explain how these are applied to 15926.
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-3
AUTHOR: USA
CLAUSE: Part 1, Clauses 1,5, and 6 and Part 2
CLASSIFICATION: Major Technical
DESCRIPTION: There is already variability in industry use of the 15926 model for representing the same information, i.e., using different structures in the model to represent the same information. Some of implementations are just implementing subsets. 15926 asserts no subsetting of the data model. Yet, it appears that 15926 was never intended to provide a specification for getting common implementations. There is a need for a common understanding and consistent use of the data model.
PROPOSED SOLUTION: provide guidance to ensure common usage of the model.
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-4
AUTHOR: USA

CLAUSE: Part 1, Introduction, Clauses 1, 3, 4 and 6
CLASSIFICATION: Minor Technical
DESCRIPTION: The scope of 15926 is ambiguous with reference to explaining the types of technical data which are in scope. 15926 would be improved by resurrecting the early POSC/CAESAR scope and requirements matrices and explaining intended uses of 15926 implementations and the types of technical information supported by 15926.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-5
AUTHOR: USA
CLAUSE: Part 1, Clauses 1, 4, 5, and 6
CLASSIFICATION: Minor Technical
DESCRIPTION: Successful implementations of 15926 are the responsibility of the customers and vendors. This is not explained in the document and is probably not understood by many observers in industry.
PROPOSED SOLUTION: add paragraphs to explain the "user pre-requisite actions and investments" for using and exploiting 15926
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-6
AUTHOR: USA
CLAUSE: Part 1, Introduction and Clause 1
CLASSIFICATION: Minor Technical
DESCRIPTION: Part 1 does not explain that 15926 is developed as a repository for the information that may be contained on P&IDs, PFDs and equipment data sheets AND that 15926 has not been developed or validated to support the graphical (e.g., P&ID) applications or 3D modeling (plant design) applications.
PROPOSED SOLUTION: add paragraphs to explain these points
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-7
AUTHOR: USA
CLAUSE: Part 1, Introduction and Clause 5
CLASSIFICATION: Minor Technical
DESCRIPTION: The current RDL is very thin in providing sufficient definitions by reference to properties for types of things to support plant design and commissioning. There is current work on documenting connections between types of things and types of characteristics (links for declaring properties that are fundamental to a thing and to declare properties that may be applicable to a thing.) These fundamental capabilities should be completed and validated prior to circulating the DIS version.
PROPOSED SOLUTION: Complete these fundamental capabilities for plant systems and components prior to circulating the DIS version.
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-8
AUTHOR: USA
CLAUSE:
CLASSIFICATION: Minor Technical
DESCRIPTION: There is a need for validation of the completeness and sufficiency of RDL with 15926 to support the target capabilities. The delivery of a validation report, similar to the required AP Validation

Report (required for release of ISO 10303 application protocols) would be useful for clarifying scope capabilities and providing a level of confidence for industry. There is a P/C Norsok effort on mapping engineering data sheets to 15926 and the RDL to validate these for that use. It was noted that the SC4 Quality Committee did not require or even ask about a validation report. This issue should also be forwarded to the Quality Committee.
PROPOSED SOLUTION: Document a Validation Report.
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-9
AUTHOR: USA
CLAUSE: Parts 1 and 2
CLASSIFICATION: Minor Technical
DESCRIPTION: Standardization of 15926 templates could accelerate adoption and use of 15926 by industry. Initial templates could become an informative addition. These could become standardized on their own.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-10
AUTHOR: USA
CLAUSE:
CLASSIFICATION: Minor Technical
DESCRIPTION: There is no progress on investigating and developing mappings between 15926 and AP 227. Some effort should be assigned to complete this promised task (promised as part of the PWI). This work would help to identify elements of the high value templates, would build on the concepts defined in the process plant common glossary (used by AP 221, AP 227 and AP 231), and would contribute to the PIEBASE and SC4 goals of interoperability.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-11
AUTHOR: USA
CLAUSE: Part 2, Clauses 1 and 5 and supporting documents
CLASSIFICATION: Minor Technical
DESCRIPTION: The documents do not provide sufficient information for correct or at least consistent use of 15926. How to represent a design case as a typical&aspect&functional physical object is an example of the possible usage of 15926 for which guidance for consistency is needed. That is not an obvious choice from the 15926 structures.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-12
AUTHOR: USA
CLAUSE: Parts 1 and 2
CLASSIFICATION: Minor Technical
DESCRIPTION: Both Parts should be updated to reference the RDL documents and any supporting documentation for guidance on using and extending the RDL.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-13
AUTHOR: USA
CLAUSE: Parts 1 and 2
CLASSIFICATION: Minor Technical
DESCRIPTION: Both Parts would be improved with additional diagrams to explain the various aspects and "views" of the 15926 structures. Some of the diagrams from Jan Sullivan's presentation at the U.S. Review Workshop could be useful additions to both Parts, e.g., the diagram on aspects for Part 2.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-14
AUTHOR: USA
CLAUSE: Part 2
CLASSIFICATION: Minor Technical
DESCRIPTION: The flexibility of the mechanisms for representing connections and connector is another source of potential problems in ensuring consistent representations of the same information. These are examples of concepts which should be considered for templates.
PROPOSED SOLUTION:
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-15
AUTHOR: USA
CLAUSE: Part 2
CLASSIFICATION: Minor Technical
DESCRIPTION: How spatial value is used for representing locations in a plant or in a coordinate system is not explained.
PROPOSED SOLUTION: add this information to the documentation.
RESOLUTION:

ISSUE NUMBER: USA-oil&gas-16
AUTHOR: USA
CLAUSE: Part 2

Address reply to:
ISO TC 184/SC4 Secretariat
National Institute of Standards and Technology
Building 220, Room A127
Gaithersburg, MD 20899 USA
Phone: +1-301-975-4375 Telefax: +1-301-975-4694 Email: sc4sec@cme.nist.gov url - http://www.nist.gov/sc4/